

# Rigorous Real-World Teaching and Learning

BY



Diane Lapp

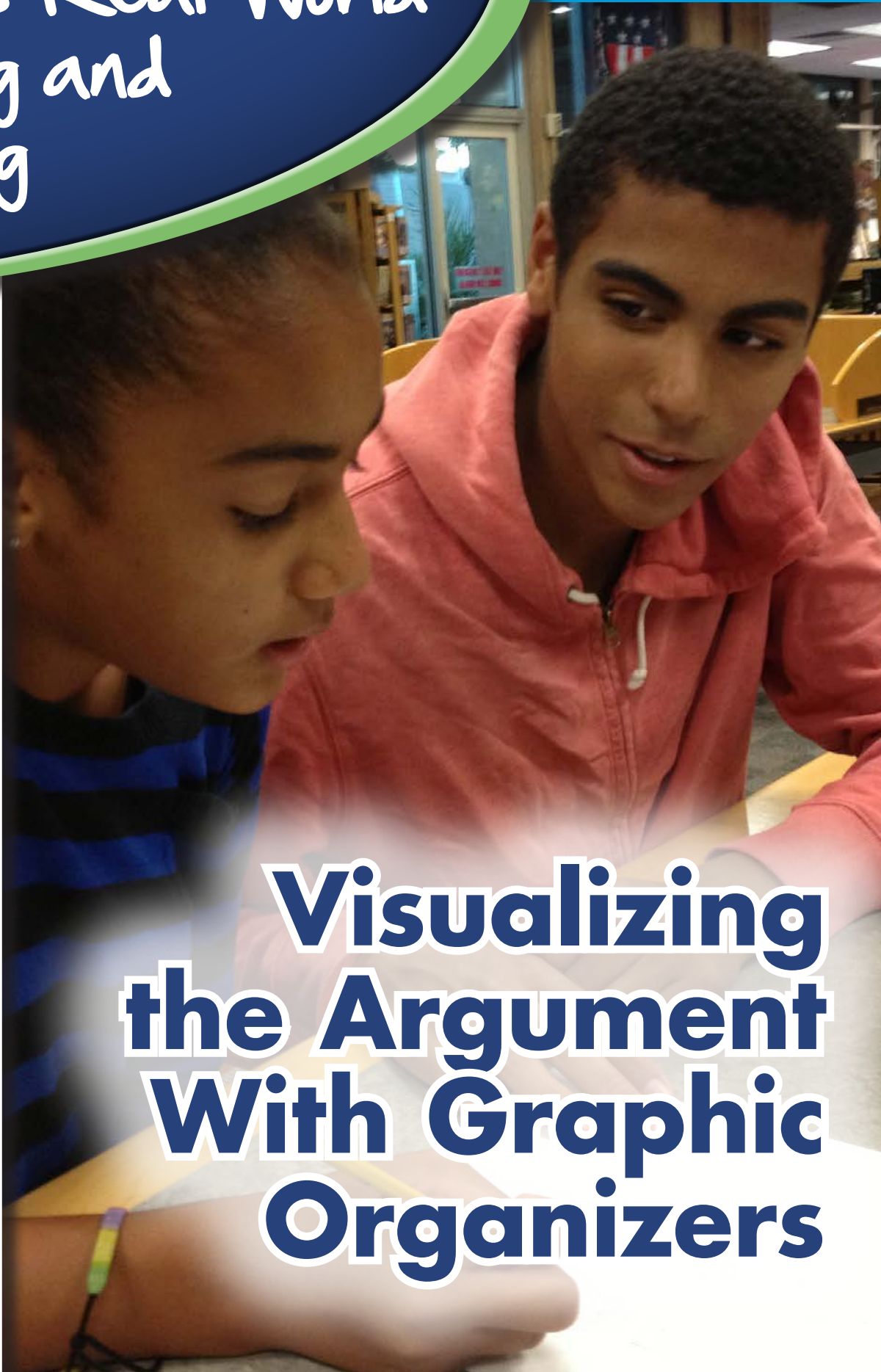


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## Visualizing the Argument With Graphic Organizers



Lajuana's sixth-grade teacher believed that students must investigate a topic thoroughly before they have the depth of knowledge needed to take a stance, support a claim, and use reasoning and evidence to justify an argument. As students investigated concepts in science and social studies, Lajuana and her peers examined topics from many perspectives before taking a stance that they could substantiate with well-documented evidence. She learned this process so well that several years later, she still independently applied it in her work in 10th grade (e.g., Wolsey, Lapp, & Fisher, 2012).

Even though the type of evidence needed to support an argument in social studies may differ from that used in literary criticism or science, the model served her well. For example, when studying a historical argument, she learned to search primary sources such as a diary or a colonel's written orders to his troops to identify evidence to support his decisions and commands. In science, she realized that evidence tends to require an examination of the methods used to derive a conclusion, what the conditions for a given experiment might be, or under what conditions other data were collected in the field. By doing so, she learned that one cannot argue a position well without having a thorough understanding of all aspects of the topic. She learned to examine a topic from multiple perspectives and evaluate how authors make a claim and how they use evidence to support the claim. Applying this knowledge, she also learned to write an argument by first studying a topic from multiple positions and then taking a stance and using evidence to support her claims or assertions.

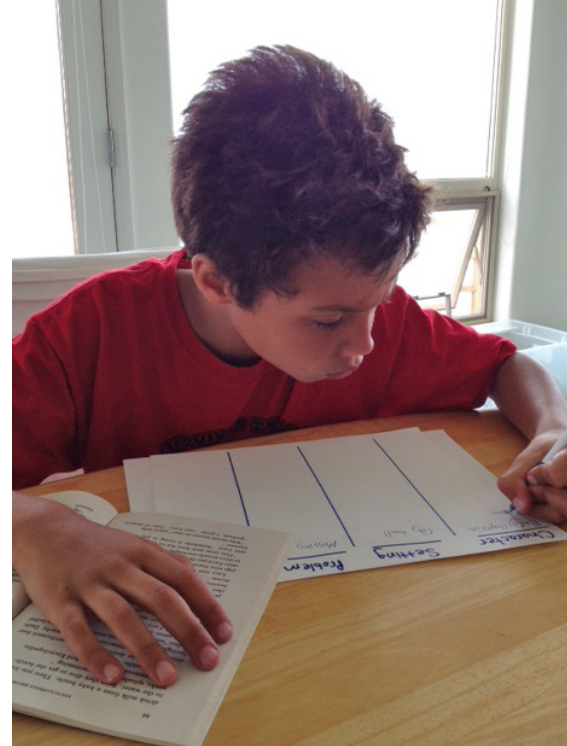
Like Lajuana, students in classrooms that subscribe to the principles of the Common Core State Standards (CCSS; National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) must become facile at evaluating and using argumentation

in many types of written and spoken discourse. Although most teachers are familiar with teaching students to write persuasively, persuasive writing is not the same as argument. In persuasive writing, like argumentative writing, writers make claims. However, in persuasive writing, these claims are not always supported by evidence. For example, a writer may use persuasion to convince consumers to buy a product. The writer's claims, however, are not necessarily supported by evidence. In argumentative writing, claims are supported by evidence and include specific elements that are unique to argumentation, such as warrants and counterclaims, which will be discussed later.

Presenting an argument requires students to make effective use of text sources or other evidence in support of the claims being made if the information is to be believed and useful. Argumentation and accurate use of evidence is required for both literary and expressive discourse. Regardless of the mode of presentation, when arguing a position, students should be able to do the following:

- Provide support for an interpretation.
- Verify a stance or point of view.
- Understand evidence thoroughly enough to evaluate and respond to the claims of others.

In its most direct form, argumentation is the presentation of evidence through valid reasoning that supports a thoroughly investigated claim, which is a statement in which an author gives his or her position on a topic. Moving through the grades, students should learn through purposeful instruction that they need to study a topic thoroughly before taking a stance so their claims are relevant and well documented. Students need to determine what sources to use, how to evaluate them to determine whether they represent a robust exploration of the topic, and how best to avoid logical traps (e.g., selecting only sources that support one side of



an argument while neglecting opposing viewpoints).

## A Trajectory of Development

As students move through the grades, they use writing as a way to share their thinking and develop more sophisticated understandings of how language is used to link relevant ideas. Table 1 traces the K–12 development of the CCSS's Writing Anchor Standard 1, which notes that by grade 12, students should be able to make and justify well-studied arguments. The trajectory of development of this skill indicates that students in the early grades should be able to identify and characterize evidence supporting their opinions. By fourth grade, they must include information along with reasons, facts, and details linked by phrases such as *in addition* or *in order to*. Moving from opinion writing to formal argumentation by sixth grade involves making an argument with organized claims, presented with supporting data and reasons or warrants (Toulmin, 2003) that document relationships between the claims and the data.

**CCSS.ELA-Literacy.CCRA.W.1:** Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

Grade	Grade-Specific Standard
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### The Primary Years

K	<b>CCSS.W.K.1:</b> Use a combination of drawing, dictating, and writing <b>to compose opinion pieces</b> in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., <i>My favorite book is...</i> ).
1	<b>CCSS.W.1.1:</b> Write <b>opinion pieces</b> in which they introduce the topic or name the book they are writing about, state an opinion, <b>supply a reason for the opinion, and provide some sense of closure.</b>
2	<b>CCSS.W.2.1:</b> Write <b>opinion pieces</b> in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, <b>use linking words</b> (e.g., <i>because, and, also</i> ) <b>to connect opinion and reasons</b> , and provide a concluding statement or section.

Notice the bolded sections to see the progression of development. Students first learn to state and write opinions that become progressively more thoroughly documented and shared, moving from simply providing opinions in kindergarten to providing introductions, reasons for opinions, and a closing in grade 1. In grade 2, students provide introductions, opinions, reasons, and a conclusion. The craft of writing through word choice becomes important because students must select effective linking words to join opinions and reasons.

### The Intermediate Years

3	<b>CCSS.W.3.1:</b> Write opinion pieces on topics or texts, supporting a point of view with reasons. <ul style="list-style-type: none"> <li>a. Introduce the topic or text they are writing about, state an opinion, and <b>create an organizational structure that lists reasons.</b></li> <li>b. Provide reasons that support the opinion.</li> <li>c. Use linking words and phrases (e.g., <i>because, therefore, since, for example</i>) to connect opinion and reasons.</li> <li>d. Provide a concluding statement or section.</li> </ul>
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Notice that this standard builds on the foundation provided in grades K–2 but changes dramatically in grade 3. Note the bolded section indicating that students must now be taught to assume a point of view for which they must identify a more sophisticated organizational structure that supports their point of view with opinions and reasons and links ideas together with not only words but also phrases.

4	<b>CCSS.W.4.1:</b> Write opinion pieces on topics or texts, supporting a point of view with reasons <b>and information.</b> <ul style="list-style-type: none"> <li>a. Introduce a topic or text clearly, state an opinion, and <b>create an organizational structure in which related ideas are grouped to support the writer's purpose.</b></li> <li>b. Provide reasons that are <b>supported by facts and details.</b></li> <li>c. Link opinion and reasons using words and phrases (e.g., <i>for instance, in order to, in addition</i>).</li> <li>d. Provide a concluding statement or section <b>related to the opinion presented.</b></li> </ul>
5	<b>CCSS.W.5.1:</b> Write opinion pieces on topics or texts, supporting a point of view with reasons and information. <ul style="list-style-type: none"> <li>a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose.</li> <li>b. Provide <b>logically ordered reasons</b> that are supported by facts and details.</li> <li>c. Link opinion and reasons using words, phrases, and clauses (e.g., <i>consequently, specifically</i>).</li> <li>d. Provide a concluding statement or section related to the opinion presented.</li> </ul>

Notice that in grades 4 and 5, students create a more sophisticated writing product. They support a point of view with reasons, information, facts, and details and provide a conclusion. They must craft an organizational structure in which ideas are strategically grouped and logically ordered and opinions and reasons are linked using increasingly sophisticated language units, including words, phrases, and clauses.

(continued)

**Table 1 • Common Core State Standards Writing Anchor Standard 1 Across the Grades**



## The Middle School Years

6	<p><b>CCSS.W.6.1:</b> Write <b>arguments</b> to support claims with clear reasons and <b>relevant evidence</b>.</p> <ul style="list-style-type: none"> <li>a. Introduce <b>claim(s)</b> and <b>organize</b> the <b>reasons</b> and <b>evidence</b> clearly.</li> <li>b. Support <b>claim(s)</b> with clear <b>reasons</b> and relevant <b>evidence</b>, using <b>credible sources</b> and <b>demonstrating</b> an <b>understanding</b> of the topic or text.</li> <li>c. Use words, phrases, and clauses to <b>clarify the relationships</b> among claim(s) and reasons.</li> <li>d. Establish and maintain a <b>formal style</b>.</li> <li>e. Provide a <b>concluding statement</b> or section that <b>follows</b> from the <b>argument</b> presented.</li> </ul>
<p>Notice that in grade 6, the writing of opinions shifts to the construction of an argument in which students support claims with text-based evidence. They employ formal organizational structures of argument, including claims, reasons, evidence, and credible sources, along with words, phrases, and clauses that link relationships among claims and reasons. At this level, students become aware of the need to establish and write in a formal style.</p>	
7	<p><b>CCSS.W.7.1:</b> Write arguments to support claims with clear reasons and <b>relevant evidence</b>.</p> <ul style="list-style-type: none"> <li>a. Introduce claim(s), acknowledge <b>alternate or opposing claims</b>, and organize the reasons and evidence <b>logically</b>.</li> <li>b. Support claim(s) with <b>logical reasoning</b> and relevant evidence, using <b>accurate, credible</b> sources and demonstrating an understanding of the topic or text.</li> <li>c. Use words, phrases, and clauses to <b>create cohesion</b> and clarify the relationships among claim(s), reasons, and evidence.</li> <li>d. Establish and maintain a formal style.</li> <li>e. Provide a concluding statement or section that follows from and supports the argument presented.</li> </ul>
<p>Notice that in grade 7, the standard builds on earlier grade levels but introduces the need for including counterarguments, logical reasoning, and accurate sources. It also emphasizes the need for a formal and cohesive writing style.</p>	
8	<p><b>CCSS.W.8.1:</b> Write arguments to support claims with clear reasons and relevant evidence.</p> <ul style="list-style-type: none"> <li>a. Introduce claim(s), acknowledge and <b>distinguish the claim(s) from alternate or opposing claims</b>, and organize the reasons and evidence logically.</li> <li>b. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.</li> <li>c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), <b>counterclaims</b>, reasons, and evidence.</li> <li>d. Establish and maintain a formal style.</li> <li>e. Provide a concluding statement or section that follows from and supports the argument presented.</li> </ul>
<p>In addition to the requirements in grade 7, notice that in grade 8, students are now required to demonstrate the ability to distinguish their claims from alternate or opposing claims, which is an important precursor to the high school standards.</p>	

## The High School Years

9 and 10	<p><b>CCSS.W.9-10.1:</b> Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and <b>sufficient</b> evidence.</p> <ul style="list-style-type: none"> <li>a. Introduce <b>precise</b> claim(s), distinguish the claim(s) from alternate or opposing claims, and <b>create an organization</b> that <b>establishes clear relationships among claim(s), counterclaims, reasons, and evidence</b>.</li> <li>b. <b>Develop claim(s) and counterclaims fairly</b>, supplying evidence for each while <b>pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns</b>.</li> <li>c. Use words, phrases, and clauses <b>to link the major sections of the text</b>, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</li> <li>d. Establish and maintain a formal style and <b>objective tone</b> while attending to the norms and conventions of the discipline in which they are writing.</li> <li>e. Provide a concluding statement or section that follows from and supports the argument presented.</li> </ul>
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(continued)

**Table 1 (Continued) • Common Core State Standards Writing Anchor Standard 1 Across the Grades**

11 and 12	<p><b>CCSS.W.11-12.1:</b> Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.</p> <ul style="list-style-type: none"> <li>a. Introduce precise, knowledgeable claim(s), <b>establish the significance of the claim(s)</b>, distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.</li> <li>b. Develop claim(s) and counterclaims fairly <b>and thoroughly</b>, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.</li> <li>c. Use words, phrases, and clauses <b>as well as varied syntax</b> to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</li> <li>d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</li> <li>e. Provide a concluding statement or section that follows from and supports the argument presented.</li> </ul> <p>Notice that in grades 9–12, the emphasis is on stating, in a formal and objective way, a well-organized and thoroughly researched and documented argument that not only acknowledges counterarguments but also fairly presents those counterarguments and identifies their strengths and weaknesses. These standards call for more sophisticated, detailed organizational structures than the earlier standards do, and require that students adopt an objective tone, along with greater use of academic language that is appropriate to argument.</p>
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*Note.* The text of the standards are from various pages throughout *Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects*, by the National Governors Association Center for Best Practices and the Council of Chief State School Officers, 2010, Washington, DC: Authors. Copyright © 2010 by the National Governors Association Center for Best Practices and the Council of Chief State School Officers. The bold emphases were added.

**Table 1 (Continued) • Common Core State Standards Writing Anchor Standard 1 Across the Grades**

The keyword here is *relevant*. Random facts or bits of information will not do. In formal argumentation, evidence must be connected to the claim through the use of warrants that provide valid reasons why the evidence is worthwhile and related to the claim. By sixth grade, it will not be acceptable for students to simply list facts relative to the topic at hand (e.g., “Three neat facts I learned about dinosaurs...”). Rather, student writers are required to think about the evidence from available sources and clearly connect it to an assertion, or claim about the content. The connection between the data or source and the claim or assertion is called a warrant. A warrant is the glue that holds the argument together by linking the evidence to the claim. It explains how and why the data proves the claim, or as Toulmin proposes, it explains how we got from the data we have to make a claim. Arguments may refer to counterclaims, too. Key features associated with

- argumentative writing include the following:
- *Claim:* The claim takes a position on a question of interest: “Some scientists believe that the maniraptoran dinosaurs were predecessors of birds.”
  - *Counterclaim:* An opposing point of view: “...but a few others believe that birds evolved along different lines.”
  - *Data or evidence:* “Some scientists cite evidence that....” “A few others believe....”
  - *Warrant:* “Our data applies to the claim because....”

The following paragraph provides an example of how these features of argument work together:

Dinosaurs fossils from the Mesozoic Era show that the maniraptorans had gizzards, built nests, and had hollow

bones (*evidence*). Because modern birds have these same qualities (*warrant*), many scientists believe that modern birds are descendants of dinosaurs (*claim*). A few scientists disagree, believing that birds evolved separately from dinosaurs (*counterclaim*).

The CCSS's writing standards also note the need to organize information to enable students to identify the claim being made and the evidence being used to support the claim. Students can visualize relationships among multiple facts and ideas through the creation of graphic organizers, which are also referred to as concept maps or mind maps (Wood, Lapp, & Flood, 1992; Wood, Lapp, Flood, & Taylor, 2008). In the next section, we explore how graphic organizers support information chunking as a way to manage multiple concepts associated with argumentative writing.

## How Graphic Organizers Help Develop Argumentation Proficiency

Because they offer a means of organizing and displaying information, graphic organizers can reduce the cognitive load (Stull & Mayer, 2007) that complex texts containing dense and unfamiliar concepts and language often present to students, thus making the texts more comprehensible. Just making a concept simpler may not be enough. If a graphic organizer or any other tool that scaffolds learning teaches students, however inadvertently, to avoid grappling with the big ideas in the text by making those ideas simple, then it has failed in many ways. Rather, graphic organizers should help students comprehend big ideas and work with them across content areas and grade levels. To accomplish this, graphic organizers should be presented as tools that adapt to the content being captured as students create and own them, not just fill them out.

Evidence in support of an argument must be marshaled thoughtfully. Just asking students to consult a specified number of sources is sometimes counterproductive if our goal is to foster solid thinking about content. Some topics are controversial; that is, there are competing viewpoints and sources of information. To understand such topics, the learner must be familiar

with all sides of the argument and the sources on which the viewpoints rely. Graphically representing information helps learners notice holes in evidence, identify topics that are underexplored, support the reading of complex texts, and write well-supported arguments.

## Making Complex Texts Manageable

More than ever, teachers seem to be asking students to read more complex texts, often informational texts, with the goal of improving students' learning of disciplinary content (e.g., science, social studies, physical education). Although there are many similarities in the reading and writing tasks across disciplines (e.g., Brozo, Moorman, Meyer, & Stewart, 2013), there are also many distinct differences (e.g., Shanahan & Shanahan, 2008). For example, there are many different types of informational texts (Moss, 2013); each has its own unique structures and formats. Reading comprehension is genre dependent (Duke & Roberts, 2010); students need explicit instruction in specific strategies unique to reading and writing in particular genres if they are to successfully negotiate the many text types encountered during a school day. Similarly, argument can be found in any text genre, but it takes different forms in different genres. Students must learn to analyze argument as it appears in multiple genres if they are to become accomplished readers and writers in every discipline.

In its most direct form, argumentation is evidence that supports a claim. We can denote this with  $C$  representing a claim and  $E$  representing the evidence:  $C \rightarrow E$ . This formulation is easily represented as a graphic organizer, with students adding boxes to show additional evidence as required. Although this configuration is not

without its problems, it is a place to start thinking about the assertions or claims and the data or evidence on which they rest. It is best to try to avoid assigning tasks that call for a specific number of sources or a preidentified number of discrete bits of evidence (e.g., "Locate and describe three facts about shield volcanoes"). However, there are times when such approaches may provide a foundation, or minimum target, for getting students to consider evidence beyond a single source or to select random facts that confound coherent writing.

## Expanding the Skills Students Bring to Class

Three intersecting factors need to be considered as students become proficient in using graphic organizers to support organizing and learning across content areas and grade levels. First, disciplines organize knowledge in different ways. Additionally, learning tends to become increasingly complex and nuanced over time. Although students may learn about the structure of government in fifth grade, for example, they will add to that knowledge in a more complex way when they study government in 11th grade. Just as these two conditions mediate learning between content areas and across grade levels, the graphic organizers that students use and create must reflect the nuances and increasing complexity of the texts they encounter and create. Finally, over time, students must also assume increasing responsibility for recognizing the nuances and complexities of texts, and they must use that knowledge to create their own representations of learning across grade levels and disciplines. To begin this process, teachers can help students understand how a literacy process such as argument becomes increasingly sophisticated and involves adaptations across disciplines. The description offered in Sidebar 1 clarifies the significant role played by a graphic organizer in making information comprehensible.





## Sidebar 1 • What Is a Graphic Organizer?

Graphic organizers combine linguistic information with nonlinguistic representations to assist students in organizing their thinking about complicated topics. Because of the chunking and illustrative dimension, graphic organizers make the structure of information comprehensible, partly by reducing the cognitive load required in grappling with the material in either receptive tasks (e.g., reading) or expressive tasks (e.g., writing). A graphic organizer (sometimes abbreviated as GO) can be used to do the following:

- Build or activate knowledge of relevant organizational patterns in advance of reading.
- Organize large amounts of information, especially competing ideas, in preparation for writing or other expressive language tasks.
- Demonstrate how common patterns of organizing information (e.g., cause and effect) can be applied to new learning.

Graphic organizers are particularly useful learning tools when the information with which students are grappling is not well organized, or the text is especially complex or unfamiliar.

## Into the Classroom

### Grade 4: The Power of Investigation

Mr. Ramos was really frustrated. He had provided graphic organizers for his fourth-grade students to use to support their reading and eventual writing. The class had watched videos and discussed what they saw and read. It seemed that the students had really understood the idea of geologic time, which is identified as a fourth-grade topic of study in the Next Generation Science Standards for earth and space science. Attempting to blend the NGSS and CCSS standards for grade 4, he asked the students to write to their friends to explain the geologic era or period that they found most fascinating and to use information to support their opinions. However, the students did not explore other geologic eras in any depth beyond those they already knew well.

If students had taken the cue from Mr. Ramos' prompt and explored beyond what they already believed they knew, they would have examined the various periods of geologic time by comparing and contrasting the periods and then using factual information to explain

their opinions regarding which was most fascinating. However, the students did not take the cue; their own background knowledge actually got in the way of what they needed to learn. Almost every student wrote about the Jurassic Period. The newly released and remastered IMAX 3-D version of the movie *Jurassic Park* informed the students' opinions in a way that prevented them from exploring beyond the exciting world of the movie.

When students used the simple graphic organizer in Figure 1, they started with a claim ("The Jurassic is the most interesting of the geologic periods") and then proceeded to build their work based on facts that had to do only with that period. They were unable to compare the Jurassic with other periods because they already believed their choice of the Jurassic Period fit the terms of the task. Earlier, we mentioned that the idea of starting with a claim and then looking for evidence to support it was problematic. In this case, the students devised their claims before they were fully familiar with the evidence available to them to inform that claim. Thus, they failed to fully explore geologic time as a way of thinking about earth's history, and they did not push

themselves beyond their current notions of the age of dinosaurs.

Background knowledge is often a ladder to knowledge, but not always. In this case, the students needed something to prompt them to go beyond the singular world of the Jurassic Period. Mr. Ramos devised a plan of using graphic organizers to support expanding student learning. Using a simple graphic organizer had backfired; what the students needed was a graphic organizer that encouraged them to explore several geological time periods before choosing the one that was of the most interest to them. Using the Internet workshop approach (Leu, Leu, & Coiro, 2004), Mr. Ramos gave the students several weblinks and paper-based sources with information about each period. All were appropriate to the grade level and promised to challenge the students' thinking and reading capabilities. Figure 2 is a revision of the graphic organizer that Mr. Ramos used to promote learning about the range of geologic periods ([click here for a blank reproducible](#)).

By inverting the graphic organizer so the evidence appeared at the top and the claim at the bottom, students were encouraged to explore beyond what they knew and what excited them from the Hollywood movie. Instead of hindering

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learning, what students knew about the Jurassic Period became a springboard for learning about other periods of geologic time. In this way, the graphic organizer became a dynamic tool in the hands of an experienced teacher and students eager to learn about science. However, Mr. Ramos was not satisfied. He feared that students would stick to only three sources of information because that is how the organizer was structured. Fortunately, Mr. Ramos does not live in the Jurassic Period; he and his students live in the digital age, and computers can help.

Because he did not want to limit his budding geologists to just a finite number of sources, Mr. Ramos set up a graphic organizer online and asked his students to collaborate together in that space. This allowed the students to pool the knowledge they gained through their investigations; the number of sources or evidence points that students could add to the organizer were almost limitless. Mr. Ramos used Webspiration ([www.mywebspiration.com](http://www.mywebspiration.com)), but other tools can be found, and many are free. Visit this webpage to find additional digital graphic organizer tools: <https://delicious.com/#tdwolsey/graphic-organizer>. One group of students created the organizer in Figure 3.

My claim is:

↓

↓

↓

↓

My first piece of evidence is:

My second piece of evidence is:

My third piece of evidence is:

My fourth piece of evidence is:

↓

↓

↓

↓

Here is where I found the evidence:

Here is where I found the evidence:

Here is where I found the evidence:

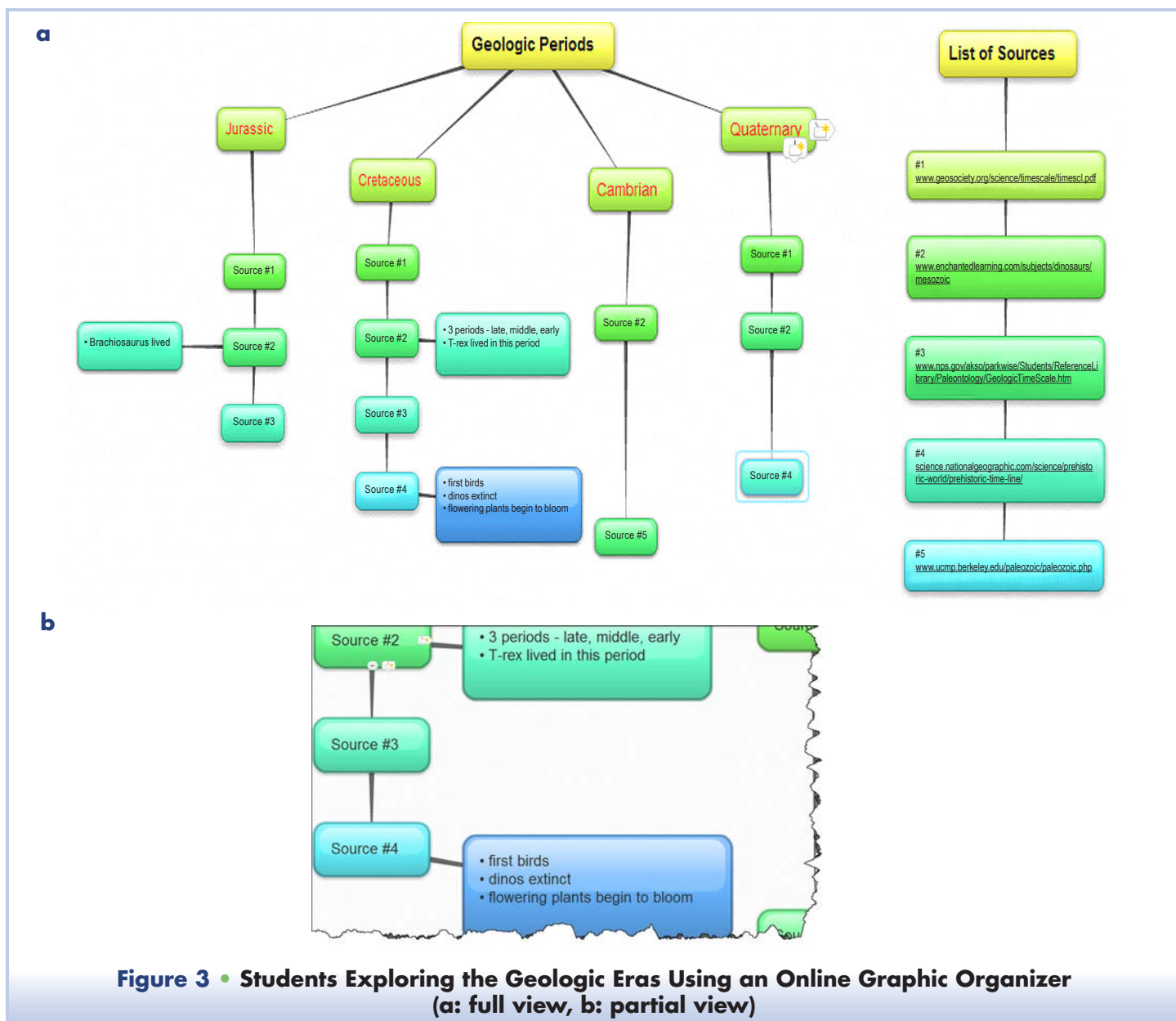
Here is where I found the evidence:

**Figure 1 • Simple Argumentation as a Graphic Organizer**

	Jurassic	Cretaceous	Cambrian	Quaternary
<b>Source</b>	↓	↓	↓	↓
Source 1:				
Source 2:				
Source 3 (or more):				
	↓	↓	↓	↓
Claim: For me, the most interesting period of geologic time is... because I learned...				

**Figure 2 • Mr. Ramos's Revised Graphic Organizer**





For a look into an eighth-grade class, see Sidebar 2, which offers an example of the use of graphic organizers as visual organizers supportive of argumentative writing.

### Grade 12: Claims, Evidence, Warrants, and Qualifiers

Ms. Knowlton recognized that even her 12th-grade science students often looked to popular and political culture sources to inform their ideas about climate change. However, she wanted them to think about the evidence, often in the form of data, and move beyond opinions

toward a reliance on the evidence and the purposes of writing that inform those arguments. She regularly reads *Science*, a publication of the American Association for the Advancement of Science. In a recent issue, she identified an article about the Anthropocene Epoch (Balter, 2013), a proposed division of the Quaternary Period that she believed would intrigue her students. Traditionally, epochs and periods in geologic time are defined by the fossil and geologic record with clear “golden spikes” or demarcations indicated therein. However, the proposed Anthropocene Epoch is defined by the line drawn as to

when human activity began to have a noticeable and noteworthy impact on the environment. For example, did the agricultural advances of humans change the environment when the species migrated beyond its African origins to Europe, the Americas, and Asia 11,700 years ago, or did the impact seriously begin at the dawn of the Industrial Age? (This is identified as a high school topic of study in the Next Generation Science Standards for earth and space science.)

Ms. Knowlton knew that her students would find this distinction interesting, even

## Sidebar 2 • Social Studies Example: U.S. History

### Grade 8: Argument by Analogy

#### Connections to the Common Core State Standards

Grade	Strand	Grade-Specific Standard
8	Reading informational text	1. Cite the textual evidence <b>that most strongly supports</b> an analysis of what the text says explicitly as well as inferences drawn from the text.
		8. <b>Delineate</b> and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; <b>recognize when irrelevant evidence is introduced</b> .
		9. Analyze a case in which two or more texts <b>provide conflicting information</b> on the same topic and <b>identify where the texts disagree</b> on matters of fact or interpretation.
8	Writing	1. Write arguments to support claims with clear reasons and relevant evidence.

*Note.* The standards are from *Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects* (pp. 39 and 42), by the National Governors Association Center for Best Practices and the Council of Chief State School Officers, 2010, Washington, DC: Authors.

The students in Ms. Wong's eighth-grade class were learning about the origins of the amendments in the Bill of Rights, and the news that the National Security Agency (NSA) was gathering data on phone calls made by U.S. citizens provided just the opportunity that Ms. Wong wanted to explore the Fourth Amendment. In Colonial times, the British issued writs of assistance that allowed government officials to search property almost at will and without court supervision. The purpose was generally to identify goods brought to the colonies without the payment of customs duties. Ms. Wong asked her students, after considerable study of the Bill of Rights, to study and prepare to argue by analogy.

Argument by analogy is one of several argumentation schemes; in this case, to argue whether one document had attributes similar to another, a conclusion might be drawn based on those similarities. Ms. Wong wanted her students to argue that writs of assistance were similar or not similar in important respects to the order issued by the Foreign Intelligence Surveillance Court that permitted the NSA to gather data about the phone calls of almost every U.S. citizen. She felt sure that this would

help her students understand key aspects of the Fourth Amendment because they understood that this amendment protects citizens against unreasonable searches and seizures. She posed the question, "Is it possible that the NSA conducted an unconstitutional search of almost every Americans' phone call data?" She knew that argument by analogy could be tricky. Argument by analogy works particularly well when there are different points of view involved and the information is uncertain or subject to interpretation.

To help her students avoid arriving at unsupported claims, she identified four critical questions (e.g., Walton & Godden, 2005) to enable them to determine whether an argument could be constructed that the NSA surveillance operation plausibly violates the Fourth Amendment. The students would find common attributes between two analogs—the things, events, or ideas being compared—in this case, the Colonial writs of assistance and the NSA surveillance. The four questions, as a template, were constructed in this manner (e.g., Walton, Reed, & Macagno, 2008):

1. Is the first analog true? For example, is it true that the writs of assistance were found to be so broad that the Fourth

Amendment of the Bill of Rights was needed to limit this type of search?

2. Are the first analog (writs of assistance) and the second analog (NSA surveillance) similar in important respects?
3. Are there important differences or dissimilarities between the two analogs?
4. Is there another, third possibility that is similar to one of these analogs except that the new one is false?

Next, Ms. Wong set up a spreadsheet to serve as a graphic organizer in an online document-sharing program. The advantages of the program included the possibility of the cells of the graphic organizer expanding to accommodate large amounts of text, the capability of the spreadsheet to include links to multiple online documents that students identified, and the opportunity for students to work on the document at different times but still collaborate on its creation. In addition, the number of points of comparison could expand as students explored the sources they consulted and labeled the type of each source (primary or secondary). The spreadsheet organizer can be seen in Figure S1.

(continued)

## Sidebar 2 (Continued) • Social Studies Example: U.S. History

	A	B	C	D	E	F	G	H
1		Analog 1 - Colonial Writs of Assistance - List key attributes	Analog 1 - List reliable sources with a link to online sources for each key point. Primary or secondary source?	Analog 2 - NSA Telecommunications Surveillance - List key attributes	Analog 2 - List reliable sources with a link to online sources for each key point. Primary or secondary?	Points of Similarity between Writs of Assistance and Telecommunications Surveillance	Critical Questions	Critical Questions Responses
2	Premise: Writs of assistance in colonial times were general authorizations by government officials to search anywhere at anytime for smuggled goods. The NSA collection of phone records disclosed in 2013 present a similar case of a general authorization to search and are similar to colonial writs of assistance.						Is it true that writs of assistance in colonial America were found to be violations of the rights of citizens?	
3	Point 1					Which points of similarity might not be relevant?	Are the colonial and NSA examples similar to each other?	
4	Point 2						Are there important differences between the colonial and NSA examples?	
5	Point 3						Is there another case similar to the colonial example where such searches were found not to be violations of the rights of citizens?	
6	Expand to add additional points							
7								

**Figure S1 • Using a Spreadsheet as a Graphic Organizer**

Once the students finished gathering and analyzing the sources for each of the examples, they prepared an extended constructed response arguing that the Colonial and NSA examples

are sufficiently similar to each other, thus leading to an assertion that the NSA may have violated the Fourth Amendment rights of U.S. citizens. Alternately, students might argue the assertion that

the Colonial and NSA examples are not similar and that the Colonial example cannot be used to explain the possible violation of the Fourth Amendment by the NSA in the 21st century.

if it ran counter to the popular or political beliefs that they encountered in news feeds and social media. Seeing how evidence was linked with the claims made would provide the students with a window into the world of scientists who study climate and human nature. Warrants and qualifiers, Ms. Knowlton found, were needed. She created two graphic organizers to help her students. The first helped them grapple, through summarization, with the difficult reading assignment that was not beyond their grasp but was definitely not written with 12th-grade students in mind. The

second built on their summary to explore new resources that might help them understand why the discussion about if or when to change the demarcation line for the Anthropocene era was a significant, scientific discussion. In short, she wanted to provide an entry point for her students into the world of scientific discourse.

Because the article was somewhat challenging for all the students, Ms. Knowlton first asked them to summarize using a graphic organizer (see Figure 4). Summarizing, she reminded her students,

helps readers comprehend difficult material, and this article describing opposing points of view in an ongoing discussion within the science community needed very close attention while reading. In summarizing the ideas of another, the summarizer must put aside personal notions and capture just the ideas themselves. The summarization graphic organizer (Figure 4) requires students to acknowledge the conflicting perspectives of different scientists and to identify evidence supporting those perspectives ([click here for a blank reproducible](#)).



<b>The Anthropocene Debate:</b> "Archaeologists Say the 'Anthropocene' Is Here—but It Began Long Ago" <sup>a</sup>	<b>Verbs:</b> <i>argue, assert, believe, claim, emphasize, insist, observe, remind, report, suggest<sup>b</sup></i>		
This article	describes	a debate among archaeologists about whether a new epoch in geologic time has arrived and when it began.	
Some scientists		Indicate what some people claim:	because...
But other scientists		Please see the attachment.	because...
So			

<sup>a</sup>Balter, M. (2013). Archaeologists say the 'Anthropocene' is here—but it began long ago. *Science*, 340(6130), 261–262.

<sup>b</sup>From "They Say"/"I Say": *The Moves That Matter in Persuasive Writing* (p. 37), by G. Graff and C. Birkenstein, 2007, New York, NY: W.W. Norton. Copyright © 2007 by W.W. Norton & Company.

**Figure 4 • Ms. Knowlton's Summarization Graphic Organizer**

Evidence (List all points of evidence.):	So the claim is...
	unless (Include any qualifiers.)...
Since...	
Reasons the evidence fits the claim:	

**Figure 5 • Ms. Knowlton's Argumentation Graphic Organizer**

Next, to help students understand the nature of the discourse, the students used an argumentation graphic organizer to parse the arguments (meeting CCSS RI.1–3 for grades 11 and 12); in particular, the organizer helped students look at claims and counterclaims, the evidence that supports the claim, and the reason the evidence is sufficient or warranted. See Figure 5 for Ms. Knowlton's argumentation graphic organizer. Because the article described more than one argument, students created an organizer for each ([click here for a blank reproducible](#)).

Ms. Knowlton's students live near a large, inland lake. The native perch were washing up onshore in what appeared to be a massive fish kill. Students found historical data online and in the archives of the local newspaper about the temperature

of the lake, the fish population over the last five decades, algae growth, pollution, and oxygen levels. Next, they visited the lake and tested for a variety of factors that they had read about. From this inquiry, they developed a claim about the cause of the die-off. From this, they used the graphic organizer in Figure 5 to plan the argument in support of their claim. Students worked in teams of three to write a report (meeting CCSS W.1a and W.9b for grades 11 and 12) that demonstrated the methods scientists might use to investigate a phenomenon and students' command of the principles of argumentation.

Teaching argument writing is essential to developing students who will be ready for college and careers. However, the need to understand argument extends beyond this purpose. According to Wilhelm

(2007), argument is the most important text type to teach students because it is central to critical inquiry, knowledge making, and democracy itself. The ability to make and evaluate arguments is essential to an informed citizenry.

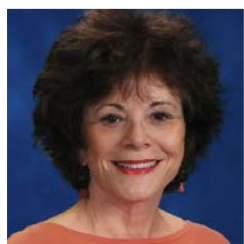
The CCSS help ensure student understanding of argument by creating a trajectory of increasingly sophisticated skills in argument writing that gradually introduces more and more complex aspects of this type of writing to students as they progress through the grades. Eventually, students will develop the requisite skills for determining appropriate evidence, deriving sound claims based on that evidence, and knowing what evidence counts in different disciplines. Through effective scaffolded instruction that incorporates graphic organizers, teachers can help students learn this important skill.

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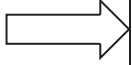
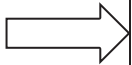
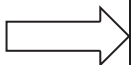
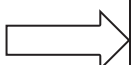
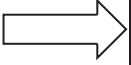



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## Graphic Organizer for Comparing Evidence Leading to a Claim

Concept:	Concept 1:	Concept 2:	Concept 3:	Concept 4:
				
Source 1:				
Source 2:				
Source 3:				
				
Claim:				



## Summarization Graphic Organizer

Source Title and Topic	Verbs: Argue, assert, believe, claim, describe, emphasize, insist, observe, remind, report, suggest <sup>a</sup>	
This article	Insert verb from above:	Indicate the overall purpose of the source:
Some people	Insert another verb:	Indicate what some people claim: Because...
But other people	Insert another verb:	Indicate what other people claim: Because...
So	Write out the final claim the source is making about the topic:	

<sup>a</sup>From "They Say"/"I Say": *The Moves That Matter in Persuasive Writing* (p. 37), by G. Graff and C. Birkenstein, 2007, New York, NY: W.W. Norton. Copyright © 2007 by W.W. Norton & Company.

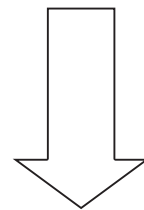
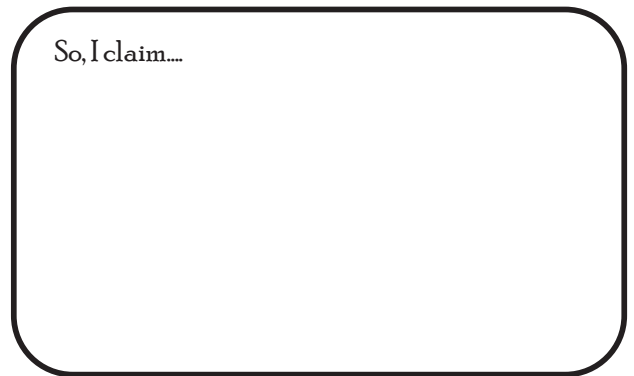
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## Argumentation Graphic Organizer With Qualifiers and Warrants

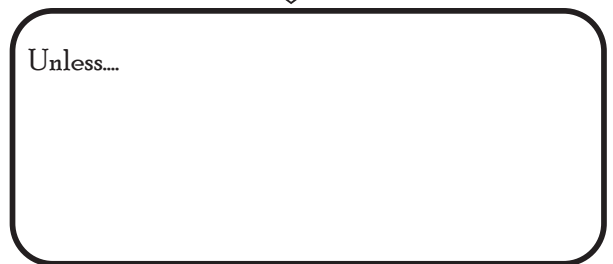
Evidence (list all points of Evidence):



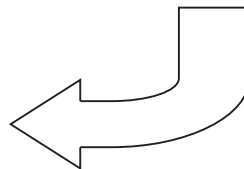
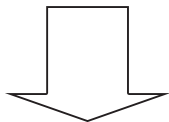
So, I claim....



Unless....



Since



Include reasons the evidence fits the claim:

